Concept of the Lecture

Modelling Sustainable Systems and Semantic Web

Summer Term 2022

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General

The lecture is planned to take place in presence (Thursdays 9-11 am., room SG 3-15) and is based on the Flipped Classroom concept. The lecture consists of three parts.

In the first part we explore the concept of a *technical system* and introduce the main concepts of TRIZ as an important systematic innovation methodology. In contrast to other creativity and innovation methodologies, TRIZ focuses on the systematisation of engineering experiences.

In the second part, we study more closely aspects of the creation of conceptual networks for data models on the basis of the *Resource Description Frameworks* (RDF), the *Linked Open Data Cloud*, the emerging *Giant Global Graph* and the importance of these developments for the organisation of contexts of cooperative action and hence management of sustainable systems.

Finally, in the third part, we explore the role of data and information and the generation of new language tools for the development of technical systems in the context of a civil society and, in particular, the importance of concept formation processes in cooperative action.

In addition to the general bibliography, each lecture will be accompanied by literature for preparation which should be **studied before the lecture**, in order to be able to follow the explanations. In the lecture the topics are presented only cursorily, but there is room to ask questions about the literature and to discuss individual aspects.

Most of the material is easily found on the internet. Nevertheless we will not dispense on classical printed literature and your ability to access it.

To support our opening for an international audience, we switch step by step to English as operational language. The lecture will use a mixed form, with English slides and German presentation.

The progress of the lecture will be reported regularly in the github repository `https://github.com/wumm-project/Seminar-S22`. There you also find the schedule and the slides of the individual lectures.

Digital Privacy

We follow not only a theoretical but also a practical Open Culture approach and make course materials publicly available. This also applies to the (annotated) chat recordings of the lecture, in which your names are mentioned. We assume your consent to this procedure, if you do not explicitly object. The discussions themselves will **not** be recorded.

Literature

- Robert Adunka (2020). TRIZ Anwendungsbeispiele (in German) https://www.triz-consulting.de/ueber-triz/triz-anwendungsbeispiele-2/
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- Nikolai Khomenko, John Cooke (2007). Inventive problem solving using the OTSM-TRIZ "TONGS" model. http://www.informatik.uni-leipzig.de/~graebe/Material/tongs-en.pdf.
- Alex Lyubomirskiy, Simon Litvin, Sergei Ikovenko et al. (2018). Trends of Engineering System Evolution (TESE). TRIZ Consulting Group. ISBN 9783000598463.
- Michael Schetsche (2006). Die digitale Wissensrevolution – Netzwerkmedien, kultureller

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